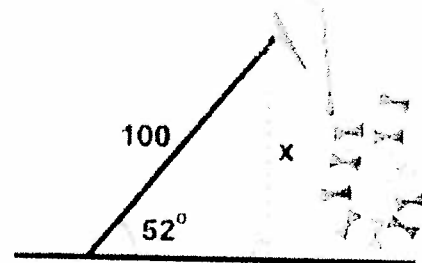


## Angle of Elevation & Depression Worksheet #3

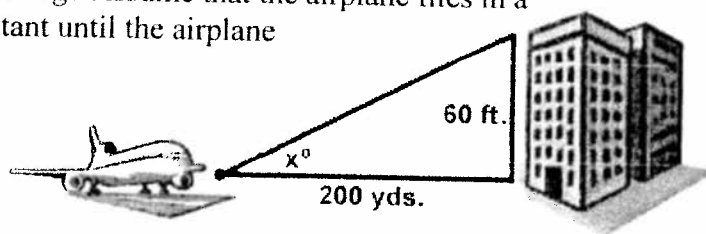
Find all values to the nearest tenth.

1. A man flies a kite with a 100 foot string. The angle of elevation of the string is  $52^\circ$ . How high off the ground is the kite?

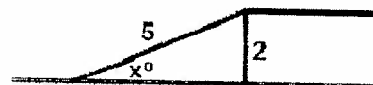


2. From the top of a vertical cliff 40 m high, the angle of depression of an object that is level with the base of the cliff is  $34^\circ$ . How far is the object from the base of the cliff?

3. An airplane takes off 200 yards in front of a 60 foot building. At what angle of elevation must the plane take off in order to avoid crashing into the building? Assume that the airplane flies in a straight line and the angle of elevation remains constant until the airplane flies over the building.



4. A 14 foot ladder is used to scale a 13 foot wall. At what angle of elevation must the ladder be situated in order to reach the top of the wall?
5. A person stands at the window of a building so that his eyes are 12.6 m above the level ground. An object is on the ground 58.5 m away from the building on a line directly beneath the person. Compute the angle of depression of the person's line of sight to the object on the ground.
6. A ramp is needed to allow vehicles to climb a 2 foot wall. The angle of elevation in order for the vehicles to safely go up must be  $30^\circ$  or less, and the longest ramp available is 5 feet long. Can this ramp be used safely?



Geometry  
Worksheet 7.5 (Angles of Elevation and Depression)

Name: \_\_\_\_\_

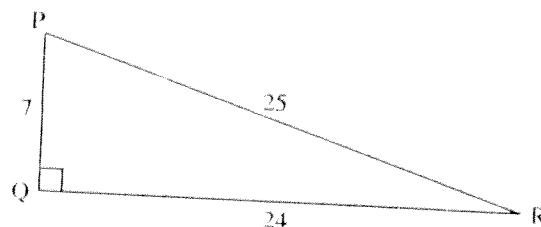
Date: \_\_\_\_\_ Period: \_\_\_\_\_

Express each trigonometric ratio as a fraction and as a decimal rounded to the nearest thousandths.

1)  $\cos R =$  \_\_\_\_\_

2)  $\sin R =$  \_\_\_\_\_

3)  $\tan P =$  \_\_\_\_\_



**Word problems.**

- 4) A guy wire is attached to the top of a 75 foot tower and meets the ground at a  $65^\circ$  angle. How long is the wire?
- 5) When the sun's angle of elevation is  $57^\circ$ , a building casts a shadow 21 meters long. How high is the building?
- 6) A kite is flying at an angle of elevation of about  $40^\circ$ . All 80 meters of string have been let out. Ignoring the sag in the string, find the height of the kite.
- 7) A man stands at the top of a 105 foot light house and sees a boat. The angle of depression to sight the boat is  $37^\circ$ , find the distance between the base of the light house and the boat.
- 8) An observer in an airplane at a height of 500 meters sees a car at an angle of depression of  $31^\circ$ . If the plane is over a barn, how far is the car from the barn?

- 9) From a point 340 meters from the base of the Hoover Dam, the angle of elevation to the top of the dam is  $33^\circ$ . Find the height of the dam to the nearest meter.

- 10) The Pyramid of the Sun in the ancient Mexican city of Teotihuacan was unearthed from 1904 – 1910. From a point on the ground 300 feet from the center of its square base, the angle of elevation to its top would have been  $31^\circ$ . What was the height of the pyramid?

**Complete the following statements with always, sometimes, or never. Explain your answer with complete sentences.**

- 11) The tangent of an angle is \_\_\_\_\_ less than 1.
- 12) The angle of elevation from your eye to the top of a twenty-foot flagpole \_\_\_\_\_ gets smaller as you walk towards the flagpole.
- 13) Given the measure of an acute angle in a right triangle and the length of one of the triangle's legs, you can \_\_\_\_\_ use trigonometry to find the length of the hypotenuse.
- 14) The angle of depression from the top of a building to a car traveling towards the building \_\_\_\_\_ increases as the car travels closer.